Auto Case Test Selection from WAP Test Suites

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The standardization institutes, delivers several standards in connection with conformance testing, such as Protocol Implementation Conformance Statement (PICS), Protocol Implementation eXtra Information for Testing (PIXIT) for describing the testing environment, Protocol Conformance Test Report (PCTR), and System Conformance Test Result (SCTR) for the proforma of the test results. The test suite on which the testing is based is also standardized for the given protocol, as the Abstract Test Suite (ATS).

For arrange the test selection in relation with a protocol stack previously should make the followings:

- filling the PICS, PIXIT tables or editors, if it is possible with help an iterative decision-helped system, and after analyze them (in SQL for example) advert the prerequisite, mandatory, optional an conditional logic within the PICS table items
- studies the relation between these documents, and the acceptable TTCN ATS test suite
- additionally ascertain between the PICS-TSS and TP and ATS and PCTR relation
- requirements and the claims of the auto case select editor

The most important problem in conformance testing is the enormous number of the possible test suites, and of course the long time needed to run them all, so the test selection is required.

The test cases create a test tree and from these should be selected the test branches according the PICS. The selection is based on adequate mathematical algorithm. The example protocol is from the mobile telecommunication world.

The **Wireless Application Protocol** (WAP) is the de-facto world standard for the presentation and delivery of wireless information and telephony services on mobile phones and other wireless terminals. The WAP specification was developed by the industry's best minds to address these issues. Wireless devices represent the ultimate constrained computing device with limited CPU, memory, and battery life, and a simple user interface. Wireless networks are constrained by low bandwidth, high latency, and unpredictable availability and stability. However, most important of all, wireless subscribers have a different set of essential desires and needs than desktop or even laptop Internet users.

Within the WAP, the **Wireless Transaction Protocol** (WTP) runs on top a datagram service and optionally a security service. WTP has been defined as a light weight transaction oriented protocol that is suitable for implementation in "thin" clients (mobile stations) and operates efficiently over wireless datagram networks.

The test case selection method is illustrated with WTP protocol.

The example model protocols, and its conformance statement is specified in the following materials:

- WAP Forum, WAP Client Implementation, Conformance Statement, Prototype 21 - September-1999
- WAP Forum, WAP Server Implementation, Conformance Statement, Prototype 21- September-1999 References

References

[1] K. Tarnay, Protocol Specification and Testing, Plenum Press New York, 1991

[2] M. Toro, K. Tarnay Principles of Validation of abstract test suites specified in concurrent TTCN. PSTV'95 Warsaw, Poland, 13-16 June, 1995

[3] prETS 300 406: "Methods for Testing and Specification (MTS); Protocol and profile conformance testing specifications; Standardization methodology".

[4] ISO/IEC 9646-2 (1994): "Information technology - Open Systems Interconnection - Conformance testing methodology and framework - Part 2: Abstract Test Suite Specification".

[5] T. Csondes, B. Kotnyek A Mathematical Model in Test Selection, Euromicro 97, Proceedings of the 23rd Euromicro Conference, Budapest Hungary Sept 1-4, 1997